little is he content with that view of popular government, which views favourably the application of scientific results derived from private means and individual enterprise, but does nothing to develop science by research and investigation, on its own initiative. To ask for bricks without providing straw is a complaint that is not limited to one time or one nationality. Prof. Abbe, writing as the adviser of a government prepared to spend its funds on the furtherance of scientific aims, fortunately has not to labour this point; but he nevertheless urges the duty on administrative authority, not only of developing the art of applying the sciences, but also that of constructing them.

The observational side of meteorology has been so long in evidence at the expense of the experimental, that it is very desirable that an eminent authority should insist upon the necessity of experiment and research in physical laboratories, as distinct from the ordinary meteorological observations with which so many observers content themselves. Foremost among the inquiries demanding increased attention, the author places the physical constants pertaining to the atmosphere itself, such as its chemical composition, its weight per unit volume, the law of the relation between pressure, density and temperature, the specific heat of the air, the viscosity, the radiating and absorbing powers, &c.

We need not follow the professor through all the problems that he enumerates calling for increased attention, since every physicist will readily admit that there is a large harvest of information to be gathered in all that concerns the behaviour of the atmosphere, whether at rest or in motion; and every one will find a still larger number of subsidiary problems, awaiting solution, in proportion to the thorough and exhausting character of the work that is bestowed on each main line of investigation. Neither is it necessary to pursue in detail the various topics of applied meteorology, which may at first sight appear somewhat local in their character, but which will be found to apply with very slight modifications to other districts, wherever sufficient enterprise and enlightenment invite the co operation of the physicist in fields of practical utility. It is of more importance, especially in consideration of the matter suggested by the second subject of this article, to see what he has to say concerning the hopefulness of the application of any theory to the problem of the general circulation of the atmosphere. In our wide dependency of India it is necessary at times to deal with imperfect information by imperfect methods; to treat a problem of economic importance with skill based on experience where it is impossible to introduce the certainty that follows mathematical deduction. This course appears to meet with approval, for it is urged that, "for the present at least, it may be wisest to seek for graphic methods and processes of quadrature, which may enable us to arrive at approximate solutions of the complicated systems of equations that represent the interaction of the nine elements that enter into the problem of the motions of the atmosphere." The attitude here suggested is scientific and prudent, and conveys a quiet censure on those who, knowing little of the difficulties that beset the solution, are impatient at the non-fulfilment of forecasts, which the better instructed know are tentative and provisional in their character. To those who exhibit their smartness by immature criticism, we recommend the study of the following paragraph with which Prof. Abbe concludes his review of the general problem. "Add to all these (difficulties) the further consideration that, when once set in motion, the atmosphere may, by some very delicate change in the conditions under which it is moving, assume some obscure form of discontinuous motion, and we at once see that the difficulties of the analytical mechanics of meteorology challenge the intellectual power of man to overcome them."

What, then, is to be said of those, who, occupying a prominent position in journalism, have the opportunity of guiding intelligent opinion, yet use that position with the deliberate intention of discrediting meteorological inquiry and of throwing additional obstacles in the way of those who struggle to solve a problem of enormous magnitude by means of very inadequate data? For this we understand to be the position of Mr. Eliot and his critics, or rather his assailants, for of criticism there is none. It is not contended that an erroneous theory has been pursued, or that some source of information has been overlooked; it is not suggested that any other forecast could have been made from the materials at hand; there is only that kind of cheap sneer, with which we are so painfully familiar, "that all the material which science has so painfully accumulated and laboured over for so many years, can give us no hint of a vital change in the weather, impending at three weeks distance." There is no recognition of the valuable work that the Indian Meteorological Office has inaugurated, and to some extent accomplished, or of the fact that for thirteen consecutive years the forecast of the monsoon has been fairly accurate, and that this is the first conspicuous failure. It seems positively childish to condemn a system which has such a uniformly good record, because in this instance "some obscure form of discontinuous motion" has baffled ingenuity, and disclosed the incompleteness of the data. It is needless to say that Mr. Eliot has a very satisfactory reply to the journalist, or that his reputation stands above any need of our support. The only point which it does seem worth while to make, is to express a regret that a good opportunity has been missed by this influential newspaper for urging upon the Government the necessity of increasing the area over which observations are made, and of educating intelligent opinion as to the direction in which additional information is to be sought. This we conceive to be the proper attitude to assume with regard to the unfortunate forecast. To strengthen the hands of the scientific advisers of the Government would be a worthy and generous motive; to sneer at the energetic officials, and to sow increased distrust on the credibility of weather forecasting, is not only to betray the writer's ignorance, but is criminal, so far as it hinders the collection of data which alone can introduce greater certainty into the forecasts, and give the Government the means of dealing with the enormous suffering that follows the failure of the monsoon rains.

W. E. P.

NOTES.

THE death is announced of Prof. E. Beltrami, professor of mathematical physics in the University of Rome, president of the R. Accademia dei Lincei, and correspondant of the Paris Academy of Sciences.

LORD RAYLEIGH will not deliver the second of his course of lectures on "Polarised Light" at the Royal Institution on Saturday afternoon next (March 10), owing to the sudden death of his mother, the Dowager Lady Rayleigh. There will be no lecture on Saturday afternoon.

THE German Society of Naturalists and Physicians will meet this year at Aachen, on September 17–21.

THE next meeting of the French Association for the Advancement of Science will be held at Paris, on August 2–9, under the presidency of General Sebert.

ASTRONOMERS will regret to see the announcement of the death of Dr. C. T. R. Luther, Director of the Düsseldorf Observatory, and the discoverer of many minor planets.

The Paris correspondent of the *Times* announces the death, at the age of seventy-four, of M. Emmanuel Liais, Mayor of Cherbourg. For many years he held posts at the Paris Observatory, and he was sent in 1857 to South America to observe the solar eclipse. He organised telegraphic meteorology in France, and devised the use of chronographs in determining longitude by electricity. He also devised a system of automatic magnetic registration by photography, and applied the method of the polarisation of light to the investigation of the solar corona. He bequeaths his property to the municipality of Cherbourg in trust for scientific purposes.

The death of the distinguished geologist, Dr. Hans Bruno Geinitz, is announced in the *Geological Magazine* for March. Born on October 16, 1814, at Altenburg, in Saxony, he was educated at the Universities of Berlin and Jena, and gained the foundations of his geological knowledge under Quenstedt. In 1850 he became Professor of Mineralogy and Geology in the University of Dresden. He was elected a Foreign Member of the Geological Society of London in 1857, and received the Murchison Medal in 1878. His labours were devoted mainly to the geology and palæontology of the Palæozoic and Cretaceous rocks of Saxony, and in particular to the fauna and flora of the Dyas or Permian formation. He died at Dresden, on January 28, aged eighty-five.

A rather severe earthquake was felt throughout the greater part of Venetia on March 4, at about 5 p.m. (G.M.T.), strong enough to produce a stampede from the churches in Padua, Venice and Verona, but not causing much damage to buildings, and, so far as known, unaccompanied by loss of life. The epicentre of the earthquake appears to have been not far from Monte Baldo, near Verona. This is a well-known seismic district, the earthquakes of which, and especially that of June 7, 1891, have been discussed in a valuable memoir by Dr. M. Baratta, published in the *Annali* of the Central Office of Meteorology and Geodynamics of Rome.

The last letters received from Mr. J. E. S. Moore's expedition are dated from Ujiji, on Lake Tanganyika, on November 12, 1899. The other members of the party had proceeded to the north end of the lake, where Mr. Moore was proposing to join them so soon as the necessary number of porters had been assembled. The expedition had been fairly successful both in collecting zoological specimens from the lake and in studying the geological features of the surrounding district. They had obtained numerous living specimens of the curious forms of mollusca of the lake, besides a good series of fishes and crustaceans. The celebrated jelly-fish (*Limnocnida tanganjicae*) had been met with in great numbers. Mr. Moore had escaped fever altogether, but most of the other members of the party had had a touch of it.

The pair of Grevy's zebras presented to the Queen by the Emperor Menelek, and placed by Her Majesty under the care of the Zoological Society of London, on August 14 last, have now completely recovered the effects of their journey, and appear to be in fine health and condition. It will be evident to all who see these splendid animals that Grevy's zebra (*Equus grevii*) is by far the finest and most distinct species of the group of "striped asses," excelling its brethren both in size and in beauty of markings. There are pairs of both the Mountain zebra (*Equus zebra*) and the Burchell's zebra (*E. burchelli*) in the Society's zebra-house, only the extinct Quagga (*E. quagga*) being unrepresented in the series.

The "Zoological Lectures" of the Zoological Society of London will be delivered this year in the Meeting-room at Hanover Square, instead of at the Gardens. They will be given on Thursdays, April 19, May 17, June 21 and July 19, at 4.30 p.m. (after the General Meeting). The first lecture, on April 19, on the "Animals of Australia," will be delivered by Mr. Smith-Woodward, of the British Museum.

During the last week, Mr. Garstang, of the Marine Biological Laboratory, Plymouth, carried out the fifth of his periodic surveys of the plankton and physical conditions of the mouth of the English Channel. This concludes the series provided for by the British Association at the Bristol and Dover meetings, and the Committee may be congratulated on the successful termination of an interesting series of experiments, a full account of which is promised for the Bradford meeting. Compared with the corresponding observations made at the same stations in February 1899, the water temperatures at all four stations on the last cruise showed a distinct fall, which amounted to a mean reduction of 1·3° F. in mid-Channel, 2·0° F. off Ushant, 0·7° F. off Parson's Bank, and 1·5° off Mount's Bay. Nevertheless, an axis of warm water running up Channel in a north-east direction was again observed, thus tending to establish this condition as a normal phenomenon for the winter period. The vertical and closing nets showed the existence of suspended sand and mud in the water to a height of more than 40 fathoms above the bottom—a convincing testimony of the force of recent gales.

A French translation of two of Prof. W. H. Corfield's three Harveian Lectures on disease and defective house sanitation, delivered in 1893, has been published in the *Bulletin* of the Royal Society of Public Health of Belgium, of which Society Prof. Corfield is a "Membre d'honneur."

The Istituto Lombardo announces the following as the subjects for future prizes:—The Institution prize for 1900 will be awarded for an essay on collective proprietorship in Italy; competition closes April 30, 1900; for 1901, on differential equations occurring in electrical problems; closing April 1, 1901. The two triennial medals for 1900 are for industrial and agricultural innovations in Lombardy. One Cagnola prize for 1900 is for an essay on "toxin and antitoxin"; closing April 30; and the subject for 1901 is a study of the storms, especially hail-storms, on the slopes of the Alps; last day, April 1. For the remaining Cagnola prizes the subjects have been chosen by the founder, viz. the cure of pelagra, the nature of miasma and contagion, the control of flying balloons, and the methods of preventing the forgery of a document; the closing day being December 31. The Brambilla prize, as in preceding years, is awarded for improvements in manufacturing industries in Lombardy. For the Fossati prize, the themes for next year is "regeneration of the peripheric nervous fibres in vertebrates," and for the two succeeding years, "illustration of some fact in the macro- or microscopic anatomy of the encephalus of the higher animals; entries close about the end of April. The Kramer prize is restricted to Italian engineers. For the Secco Comneno prize for 1902 the subject is a description of the deposits of natural phosphates in Italy, the competition closing on April 30, 1902. The subjects for the Pizzamiglio prize are, for 1901, secondary education; and for 1902, influence of socialistic doctrines. The Ciani prizes are to be given for the best Italian popular book, the type of book selected being scientific or educational for 1901, historical for 1904, and "narrative or dramatic" for 1907. The Tommasoni prize is to be given for the best life of Leonardo da Vinci; and the Zanetti prize for Italian improvements in pharmaceutical chemistry. The prizes, with certain specified exceptions, are open to competitors of every nationality, and the essays may be written in French, Italian, or Latin; but for full particulars we must refer to the Society's *Rendiconti*, vol. 33, part 1, or to the Secretary, Signor Ferrini, Palazzo di Brera, Milan.

PROF. A. HEILPRIN points out in the *Scientific American* that a source of doubt which attaches to the Nicaragua Canal and involves the question of permanency is furnished by the level of Lake Nicaragua—the fountain-head of the San Juan River, and the summit and feeder of the proposed canal. The regulation of its level is necessarily a matter of absolute or vital importance to the canal. The very elaborate measurements of American engineers that have been made during the last fifteen years indicate for the surface of the lake an average elevation at this time of approximately 105 feet above tide. This is nearly twenty per cent. less than the value obtained some years ago; and as the result of a consideration of the subject, Prof. Heilprin thinks it would not be safe to assume that the earlier measurements of the lake were erroneous. He thinks it more probable that the level of Lake Nicaragua is inconstant, and that the surface has dropped 15 to 20 feet in a period of little more than half a century.

THE effects of the great dynamite explosions at Avigliana (near Turin), on January 16, are described by Dr. M. Baratta in a privately printed pamphlet. About 400 kg. of nitro-glycerine and 12,000 kg. of dynamite and gun-cotton were blown up. The first and stronger explosion, though it lasted little more than a second, presented three maxima of intensity, due probably to the successive explosions of magazines a hundred metres from that in which the nitro-glycerine was stored. Owing to the situation of the manufactory, the zone of greatest damage was very small; that in which windows were almost totally destroyed extended to a distance of 5½ km.; doors and windows were made to rattle as far as Crescentino (60 km. distant); and the sound of the explosion was heard at Pavia (140 km.), Varzi (145 km.) and Lugano (160 km.).

WE have received from Prof. Albin Belar the first part (for January 1900) of a monthly report on the earthquakes recorded at the seismological observatory of Laibach, of which he is the director. Some brief notices of earthquakes which occurred in other countries during the same month are also included. As Laibach is one of the most important earthquake centres in Europe, the reports issued from the observatory cannot fail to be of considerable interest and value.

AN interesting lecture was recently delivered by Dr. J. M. Pernter before the Austrian Meteorological Society, upon some extensive experiments made in several Italian provinces last year for the prevention of damage by hail by gun-firing. The idea is an old one, but the apparatus, constructed by Mr. A. Stiger, burgomaster of Windisch-Feistritz, Steirmark, consisting of a mortar provided with an iron funnel about six feet long, appears to have obtained very satisfactory results. The experiments were witnessed by Dr. Trabert, of the Vienna Meteorological Office, and it was found that a timely commencement of the firing effectually prevented the fall of hail, whereas in districts where the experiments were not made much damage was caused by hail-storms. The immunity from damage may have been due to the force of the air-whirls, the sound of which could be heard for twenty or thirty seconds, or to the fact that the electrical discharge between the earth and the clouds was quietly effected by the shooting, and thus the chief factor of hail formation removed.

THE Victor Meyer Memorial Lecture, delivered by Dr. T. E. Thorpe, F.R.S., before the Chemical Society on February 8, is published in full in the March number of the *Journal* of the Society, with an excellent portrait of the lamented investigator. Many scientific societies, both abroad and at home, issue their publications in so tardy and irregular a manner that the example of the Chemical Society in publishing the *Journal* regularly every month might be followed with advantage. Few societies publish discourses so elaborate as that of Dr. Thorpe's within three weeks of their delivery. It is unnecessary for us to do more than briefly refer to the address, as a notice of the work and personal characteristics of Victor Meyer appeared in these columns in September 1897, shortly after his death (vol. lvi. p. 449). As a friend of nearly thirty years' standing, and as one who studied with him under Bunsen, Dr. Thorpe was in the position to give an excellent account of the remarkable services Victor Meyer rendered to science during his life. Meyer contributed to the literature of chemistry, either alone or in conjunction with his pupils, upwards of three hundred memoirs and papers. As an investigator, he was original as well as active; as the director of a large chemical laboratory and a laboratory teacher, he worthily followed in the footsteps of Bunsen; and, as a lecturer, he was brilliant as well as lucid. Dr. Thorpe's lecture is a worthy appreciation of the genius of a gifted man who devoted his energies to the advancement of science.

MR. T. SOUTHWELL contributes to the *Zoologist* his annual account of the seal and whale fishery. From this we learn that the pursuit of the Greenland Bight Whale was fairly successful during the past season; a remarkable feature being that although none of these Cetaceans were seen in the Greenland seas, they were comparatively plentiful in Davis Strait and the adjacent waters. The majority of the twenty-eight whales taken were of good size, some of them being of very large dimensions. During the year the price of whalebone fell to 1400*l.* per ton, although more is now asked; in past years more than 2500*l.* per ton has been realised. Mr. Southwell points out, as a matter for regret, that the sealers have recently taken to collecting musk-ox hides, which may easily lead to the extermination of that remarkable animal, unless efficient measures be promptly taken for its protection.

IN the March number of *Photography*, Mr. Douglas English gives the results of his experiments on photographing living fish—an art that has hitherto received but little attention. How necessary is this art, if we wish to have correct portraits of fish, will be apparent when the remarks of the author are read as to the immense alteration which takes place in their bodily form and proportions immediately after death. The difficulties with which the photographer has to contend are the mobility of the fish, which necessitates very short exposures; the great loss of actinic power in white light resulting from its passage through glass and water; and, in some instances, the delicacy of the subject and its terror under the operation. In order to counteract the first of these difficulties, Mr. English has adopted the principle of the "animalcule-tank" employed in connection with the optical lantern. After several attempts, a tank was invented capable of confining a living fish within a space sufficiently limited to enable the photographer to keep it in some degree in focus, the sides being constructed of two parallel plates of the thinnest and whitest plate-glass procurable, with provision for increasing or narrowing its diameter, within certain limits, according to the size of the fish. Several examples of the photographs thus obtained are reproduced; and although their definition is not as sharp as might be desired, they are life-like portraits which ought to be of the highest value to the naturalist.

MR. BARRETT-HAMILTON is turning his attention to the cause of the colour-change in animals which turn white in winter. In a recent issue of the *Proc. Zool. Soc.* he corroborates the view that the darker colour of the summer coat of the Arctic hare is due to the casting off of the white winter hairs and their replacement by a new growth. In the January number of the *Annals and Magazine of Nat. Hist.*, Mr. Hamilton discusses the local colour-phases of the Weasel. In the far north, as is well known, this animal turns white in winter; in the north temperate regions the reddish-brown of the upper parts is permanently retained, although the under surface is pure white; but as we proceed further south, we find weasels with the under parts more and more suffused with yellow, till in parts of the Mediterranean area the colour is buff or orange. Such increased richness of coloration in the southern part of the habitat of the weasel is paralleled among many birds.

ON the delivery of the Hunterian collections into the custody of the Royal College of Surgeons, by Government, at the beginning of the century, it was stipulated that lectures illustrative of the series should be annually delivered in the theatre. According to a list prepared by the Librarian, the lectures commenced in 1810, when those on comparative anatomy were delivered by Sir Everard (then Mr.) Home, and those on pathology by Sir William Blizzard. Since that date they have been continued almost without intermission; the roll of lecturers including the names of many of the most eminent comparative anatomists and surgeons.

WE have received from the author, Monsieur H. de Varigny, a paper published in the Jubilee volume of the Société de Biologie, entitled "Sur le Notion Physiologico-Chimique de l'Espèce," which contains much curious speculation.

FROM Prof. R. Collett we have received the second part of his contributions to the natural history of those small blenny-like fishes known as *Lycodes*, published in the *Vid.-Selsk. Skrifter Christiania*, 1899, No. 6. He there describes the life-history of *L. gracilis* from an early period till it is capable of propagation. The question is, however, mooted whether we yet know the fully adult stage of this little fish, which may possibly reveal itself in some familiar type of which the youthful condition is unknown.

DR. HERMANN VON SCHRENK has made a minute investigation of a wide-spread disease, known as peckiness and pin-rot, affecting the heart wood of the bald cypress and the incense cedar, and his observations are contained in a thesis published in the eleventh annual report of the Missouri Botanical Garden, of which Mr. W. Trelease is the director. Both these trees are representatives of a race of trees the majority of which are extinct, and in both a fungus mycelium occurs with strongly marked characteristics. The peculiar decay to which the two kinds of trees are subject appears to be caused by this fungus, the fruiting form of which has not yet been found. Dr. Schrenk has examined logs of the cypress dug up from various points in the Mississippi valley, several miles from the river, and at an average depth of ten feet below Gulf level, and he has found unmistakable evidence of the disease, which is prevalent wherever cypress grows in abundance at the present day. It therefore seems that the disease is one which has extended back for some thousand years at least, and probably further. As few fungi are known in the fossil condition, the observations are of particular interest, for they suggest that this peculiar fungus disease of the cypress and cedar has come down with its host from geologic times.

"EINE Landschaft der Steinkohlen Zeit" is the title of an explanatory pamphlet accompanying Dr. H. Potonié's recently issued wall-diagram to illustrate the leading features of the Coal-Measure flora. A reduced facsimile of the diagram itself, with an accompanying outline key-plate, forms a suitable frontispiece, and the forty pages of the pamphlet are further enriched by numerous excellently reproduced figures in illustration of the structural and morphological details briefly referred to in the text. In accordance with the author's view, which supposes an autochthonous origin for coal, the restoration here put forward represents a rich assemblage of typical coal plants growing upon a perfectly flat and more or less marshy surface. It is claimed that the reconstruction of the types here depicted is in all cases founded upon the soundest evidence as regards the actual relationship of parts.

IN the first instalment of a work on the geology of the oil-bearing strata of Galicia ("Geologie der Erdöl-Ablagerungen in den galizischen Karpathen." Lemberg, 1899), Prof. Rudolf Zuber deals with the stratigraphy of the Galician Carpathians. Of importance, as regards the yield of petroleum, is that group of beds known as the "Ropianka-Schichten," concerning the age of which, however, there has been considerable controversy. Classed originally as Tertiary, these beds, by the discovery of unmistakable though somewhat scanty palæontological evidence, were subsequently recognised as Cretaceous, but their position in the Cretaceous System has long remained a matter for dispute. In the present paper the author, after reviewing the results of previous writers, brings forward his reasons for considering these Ropianka-beds as the undoubted equivalents of the Neocomian stage in Silesia. The Tertiary rocks are well represented in Galicia, and include oil-bearing strata at several horizons. The Eocene System, which shows a locally developed nummulitic facies, comprises the most important petroleum-yielding beds. Oil occurs also at horizons of Oligocene and Miocene age.

A PAPER upon "Life under other conditions" is contributed by Mr. Geoffrey Martin to *Science Gossip* for March. The subject is one which has been recently worked at by Dr. F. J. Allen; and Mr. Martin's general conclusions seem to agree up to a certain point with Dr. Allen's, at any rate in the view that vital processes depend on the existence of an element, the compounds of which are in a condition of critical equilibrium at the temperatures at which life exists. But Mr. Martin appears to regard carbon as the substance which acts the *rôle* of the fundamental element in the animal organism; while, according to Dr. Allen, nitrogen plays an all-important part in determining vital phenomena. Mr. Martin suggests that at the higher temperatures which may exist on other celestial bodies, or which may have existed at one time on our earth, silicon may give rise to a series of compounds analogous in their complexity and instability to our "organic" carbon compounds, and under such conditions what we may call "silicon life" may exist. In connection with this view it is somewhat interesting to notice that the power of secreting silica is now possessed by what we regard as among the lowest types of vegetable and animal life, diatoms and sponges. But of course there is a wide difference between the temperatures required for carbon life, or, as Dr. Allen calls it, nitrogen life, and Mr. Martin's hypothetical silicon life.

THE Oxford University Junior Scientific Club has just issued its *Transactions* for the Summer and Michaelmas Terms of 1899, containing papers by Mr. H. E. Stapleton, on "An Extension of Dulong and Petit's Law," and by Mr. A. Gibson, on "The Retention of Plant-food in the Soil."

THE latest report of the U.S. National Museum is a volume of 1021 pages. One quarter of the volume deals with the condition and progress of the Museum during the year ending with June 1897; the remaining three quarters consists of seven elaborate papers describing collections in the Museum, and illustrated with the liberality and excellence which distinguishes the publications of the Smithsonian Institution and of the various official Bureaux of the United States. Dr. J. M. Flint describes the specimens of foraminifera obtained during the dredging operations of the U.S. Fish Commission steamer *Albatross;* and his paper is illustrated by no less than eighty collotype plates, each containing several figures reproduced from photographs of mounted specimens, enlarged by about fifteen diameters. The pipes and smoking customs of the American aborigines form the subject of a paper by Mr. J. D. McGuire. Mr. W. Tassin contributes a descriptive catalogue of minerals classified according to their chemical and physical properties. Easter Island and its inhabitants are described by Dr. G. H. Cooke. Dr. O. T. Mason has a short paper on the forms of the man's knife among North American Indians, and Dr. Thomas Wilson describes arrowpoints, spearheads, and knives of prehistoric times, his paper being illustrated by sixty-five plates, and two hundred text figures. Each of the papers is filled with information, and their attractive setting will excite the unstinted admiration of every student of science who sees the volume.

SEVERAL new editions of established scientific works have lately been received. The sixteenth edition of "Kirkes' Hand-book of Physiology," by Prof W. D. Halliburton, has just been published by Mr. John Murray. The fifteenth edition was only published a year ago, so few changes were necessary; but where required, the subject-matter has been brought up to date.—The fourth German edition of Prof. O. Hammarsten's "Text-book of Physiological Chemistry" has been translated by Prof. J. A. Mandel, New York University. The translation, which is published by Messrs. J. Wiley and Sons, is now in its third edition, and most of the available literature up to April last year is taken into account.—A second and enlarged edition of Prof. S. P. Thompson's work on "Polyphase Electric Currents and Alternate Current Motors" has been published by Messrs. E. and F. N. Spon, Ltd. The book has undergone revision, and has been improved in several respects. The chapters on graphic theory have been developed by Mr. Miles Walker, and the theory is now presented in such a shape as to be directly available for practical calculations. Many of the illustrations are new, and coloured plates are now used to elucidate various types of polyphase windings.—The third edition of Prof. J. R. Ainsworth Davis's book on "The Flowering Plant, as illustrating the First Principles of Botany" has been published by Messrs. C. Griffin and Co., Ltd. New illustrations have been added; and also a chapter on ferns and mosses, which, though not comprehended by the title, will assist students to understand the life-history and classificatory position of flowering plants.—The first part of a second revised and enlarged edition of Dr. Julius Wiesner's work on "Die Rohstoffe des Pflanzenreiches" has been published by W. Engelmann, Leipzig. The first edition appeared in 1873, and it is expected that the present one will be completed during this year. The book appeals more particularly to students of economic botany and pharmacy.—A revised edition of "The Photographer's Note-book and Index, with Tables and Exposure Rules," by Sir David Salomons, Bart., has been issued by Messrs. Marion and Co.

SINCE the discovery by Curtius of the remarkable compound of hydrogen and nitrogen, hydrazoic acid, numerous attempts have been made to obtain from it the condensation product N_6, and during the discussion at a recent meeting of the Chemical Society, Prof. Ramsay gave a short account of some experiments made in this direction in his laboratory by the interaction of silver azoimide and iodine. The wished-for substance could not be isolated, but Prof. Hantzsch, in the current number of the *Berichte*, has now succeeded in isolating a definite iodide of nitrogen from the products of this reaction. By working at a low temperature and as rapidly as possible in the presence of ether, the new iodide is taken into solution by the latter, and can be obtained as a yellowish solid in minute quantities, not exceeding 0·2 gram, by the rapid evaporation of the ether. The solid is too unstable to submit to analysis, but an examination of the solution showed that its composition was N_3I. As might be expected from this formula, the iodide is violently explosive, 0·2 gram on one occasion completely pulverising a glass desiccator. Attempts to prepare N_6 by the action of the iodide upon silver azoimide, or by the spontaneous decomposition of the iodide, were unsuccessful.

THE theory of electrolytic solution pressure of Nernst has opened a wide field of research, and has led to many interesting developments. It is still, however, open to question whether the osmotic pressure analogy has not been pushed too far, and in the current number of the *Zeitschrift für Physikalische Chemie* is a short criticism by Prof. Lehfeldt on this point. Taking the solution pressures calculated for zinc, nickel and palladium from the observed electromotive forces as $9·9 \times 10^{18}$, 1·3, and $1·5 \times 10^{-36}$ atmospheres respectively, it is pointed out that although the first number is enormous it is not necessarily impossible. It is otherwise with the figure for palladium. Since pressure is a statistical effect, a considerable number of molecules must act on unit area. $1·5 \times 10^{-36}$ atmospheres would give one or two molecules of palladium in a volume the size of the earth.

THE fact that such common alkaloids as cocaine, atropine and nicotine are derivatives of pyrrol lends considerable interest to syntheses of derivatives of the latter substance. Pyrrol-aldehyde, the analogue of benzaldehyde and furfuraldehyde, has hitherto been wanting, but its preparation has now been successfully attempted by Bamberger and Djierdjian by the use of Reimer's reaction with chloroform and potash, and is described by them in a preliminary note in the current number of the *Berichte*. The new aldehyde forms a well-crystallised hydrazone, oxime, and also an insoluble sodium sulphite compound, but differs markedly from its analogues in crystallising readily, prisms several centimetres long being obtainable, and also in possessing no smell. Many important synthetical products may be expected with pyrrol-aldehyde as a starting-point.

THE additions to the Zoological Society's Gardens during the past week include a Vervet Monkey (*Cercopithecus lalandii*), a Serval (*Felis serval*) from South Africa, presented by Mr. J. E. Matcham; a Vervet Monkey (*Cercopithecus lalandii*) from South Africa, presented by Mr. Dudley B. Myers; a Common Marmoset (*Hapale jacchus*) from South-east Brazil, presented by Miss M. C. Glover; a Greater Sulphur-crested Cockatoo (*Cacatua galerita*) from Australia, presented by Lieut.-Colonel Hopton; four Black-bellied Sand-Grouse (*Pterocles arenarius*) from Spain, presented by Mr. G. P. Torrens; a Purplish Death Adder (*Pseudechis porphyriacus*) from Australia, purchased.

OUR ASTRONOMICAL COLUMN.

OCCULTATION OF NEPTUNE.—There will be an occultation of Neptune on the evening of March 8, the moon having just passed its first quarter.

	Mean Time.	Angle from North Point.	Angle from Vertex.
	h. m.	°	°
Disappearance ...	6 13 ...	101 ...	107
Reappearance ...	7 34 ...	268 ...	249

As the moon passes the meridian of London about 6.30 p.m., the occultation is a favourable one for observation should the weather permit.

OPPOSITION OF MINOR PLANET (434), HUNGARIA.—Herr A. Berberich, of Berlin, gives in the *Astronomische Nachrichten* (Bd. 151, No. 3624) a revised set of elements and the deduced ephemeris of this body, to facilitate its detection during the coming opposition about March 23.